

CLAIMS

1. A method comprising:
optically pre-programming an electronically-programmable phase change memory device.
2. The method of claim 1, wherein the memory device comprises a non-volatile memory.
3. The method of claim 1, wherein the memory device includes a plurality of memory cell, each cell including a phase change material.
4. The method of claim 3, wherein said optically pre-programming comprises heating one or more of said cells with an energy beam; and
changing a memory state of the heated cells.
5. The method of claim 4, wherein the energy beam comprises a laser beam.
6. The method of claim 1, further comprising reading data from said memory device electronically.

7. The method of claim 6, wherein said reading data comprises determining an electrical characteristic of the phase change material in memory cells in the memory device.

8. The method of claim 7, wherein the electrical characteristic is resistance.

9. The method of claim 1, further comprising writing data from said memory device electronically.

10. The method of claim 8, wherein said writing comprises heating memory cells in the memory device using an electrical current.

11. The method of claim 1, wherein said pre-programming comprises writing device identification information to the memory device.

12. The method of claim 1, wherein said pre-programming comprises writing configuration information to the memory device.

13. The method of claim 1, wherein said pre-programming comprises writing data to the memory device.

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14. Apparatus comprising:

an energy source operative to generate an optically focused energy beam; and

a stage for holding an electronically-programmable phase change memory device; and

a controller operative to cause the energy beam to scan a pattern over the memory device, thereby pre-programming said memory device.

15. The apparatus of claim 14, wherein the memory device comprises a non-volatile memory.

16. The apparatus of claim 14, wherein the memory device includes a plurality of memory cell, each cell including a phase change material.

17. The apparatus of claim 16, wherein the controller is operative to:

heat one or more of said cells with an energy beam;

and

change a memory state of the heated cells.

18. The apparatus of claim 17, wherein the energy beam comprises a laser beam.

19. The apparatus of claim 14, wherein the controller is operative to read data from said memory device electronically.

20. The apparatus of claim 19, wherein the controller is operative to read data by determining an electrical characteristic of the phase change material in memory cells in the memory device.

21. The apparatus of claim 20, wherein the electrical characteristic is resistance.

22. An article comprising a machine-readable medium including machine-executable instructions, the instructions operative to cause a machine to:

optically pre-program an electronically-programmable phase change memory device.

23. The article of claim 22, wherein the memory device comprises a non-volatile memory.

24. The article of claim 22, wherein the memory device includes a plurality of memory cell, each cell including a phase change material.

25. The article of claim 24, wherein the instructions for optically pre-programming include instructions operative to cause the machine to:

heat one or more of said cells with an energy beam;
and
change a memory state of the heated cells.

26. The article of claim 25, wherein the energy beam comprises a laser beam.

27. The article of claim 22, further comprising instructions operative to cause the machine to read data from said memory device electronically.

28. The article of claim 27, wherein the instructions for reading data include instructions operative to cause the machine to determine an electrical characteristic of the phase change material in memory cells in the memory device.

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29. The article of claim 28, wherein the electrical characteristic is resistance.

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